Bridge No. 2415 Spanning Wilson Creek at Farm Road 156 Springfield vicinity Greene County Missouri HAER No. MO-67

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
Rocky Mountain Regional Office
National Park Service
U.S. Department of the Interior
P.O. Box 25287
Denver, Colorado 80225

HISTORIC AMERICAN ENGINEERING RECORD

Bridge No. 2415

HAER No. MO-67

HAER mo 39- SPRIF. V. 3 ~

Location:

Spanning Wilson Creek on Farm Road 156, 0.8 mile east of U.S. Highway 60,

Springfield vicinity, Greene County, Missouri

UTM: A 15/N4113430/E467151

B 15/N4113430/E467165

Quad: Springfield, Missouri (7.5', 1960 (PR 1970, 1975)

Date of Construction: 1918

Present Owner:

Greene County

Greene County Courthouse

Springfield, Missouri

Present Use:

Vehicular bridge, to be replaced by a new vehicular bridge. Projected date of

removal is fall 1991.

Significance:

Bridge No. 2415 over Wilson Creek is a short span filled spandrel arch bridge.

This concrete span has a relatively early construction date and a high degree of

physical integrity.

Historian:

Timothy C. Klinger

Historic Preservaton Associates

Fayetteville, Arkansas

April 1991

I. HISTORY

A. GREENE COUNTY TRADE

Bridge No. 2415 on Farm Road 156 serves as a reminder of the importance of agriculture transportation systems in the dynamic regional growth of Springfield during the early part of the twentieth century. In the state of Missouri, only the triad of early settlements St. Louis - Kansas City - St. Joseph and Springfield could boast of populations greater than 25,000 people. Between 1910 and 1920 Springfield had a 12.6 percent increase in population rising to nearly 40,000. This dramatic rise in population of Springfield and its rural environs had its roots in the early 1800s.

Between 1812 and 1822, some 8,000 emigrant Indians (Cherokee, Delaware, Shawnee, Illinois and Kickapoo) relocated to the upper White River country of northwestem Arkansas and southwestern Missouri.² With the Indians came government and subsidized trade financed by federal annuities.³ Commercial activity centered in the James River Valley in present Greene and Christian Counties.⁴ The trade entailed provisioning the Indians and export of commodities such as furs, hides and meat to markets in the Mississippi Valley.

The early trade routes were merely foot paths or, at the best, bridle paths. Most of them followed the old Indian trails. Such were the *traces* that we find mentioned in the descriptions of township boundaries and the like.⁵

On March 3, 1821, the Missouri General Assembly requested the federal government to extinguish all Indian land claims within Missouri. Between 1823 and 1832 the negotiated removal of Indians and consequential relocation of the tribes to the Indian Territory in Kansas and Oklahoma was completed. This event opened Green County to white immigrants from the East. Exploitation of the resources in the southwestern Ozark region continued to be available due to trade and routes established prior to Indian removal.

Greene County was formed by local community leaders and politicians in January 1883.⁷ With a year, Missouri adopted its first occupancy laws intended to secure entry rights to early settlers.⁸ Those who came to Greene County sought legal and orderly property ownership and land improvements rather than casual squatting and claiming. They included many families of means and entrepreneurial spirit directed toward progress and capital accumulation. This orientation was reflected in the rapid establishment of the requisite social institutions for permanent settlement. Post offices and postal service were established between Springfield and Carrollton, Arkansas, by 1834. The Federal Land Office opened in Springfield in 1835.⁹ The first town and county seat was located on the Kickapoo prairie near the intersection of the Boonville and White River traces and was named Springfield.¹⁰ Flanders and Morrow observed that:

The matter of these trade routes is perhaps the single most important element in the location and early development and of the subsequent history of Springfield as the central place for Greene County and finally for a large trade region...Springfield was a connecting point between the Missouri and White Rivers, and its own immediate hinterland was richly endowed with resources for a commercial agriculture.¹¹

The importance of these commercial routes were not lost on the public officials of Greene County. The General Assembly in 1822 gave each county the responsibility for the maintenance of its roads. 12 Later acts granted the right to build toll roads or bridges. 13 At the very first term of public highways, we see that the road leading from Springfield to Delaware Town, and then to Fayetteville in Arkansas Territory hereby declared to be, a public highway in Greene County to the State line. 14 This is the western portion of the great interior highway from Ste. Genevieve ... to Springfield. 15 This corridor was later known as the Military Road, as it shifted from

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Ste. Genieve to St. Louis and then on to Fort Smith along the Arkansas River. It was later renamed the *Wire Road* by the 1850s and the era of the telegraph. Additional gestures of the public spirit to enhance the commercial viability of Greene County are also found in the initial term of the court. Another order was to appoint six commissioners to, "view, lay out and mark a public road or highway from Springfield ... westwardly until it strikes the main fork of the Six Bulls ... thence in the direction of Fayetteville, in Arkansas Territory, until it reaches the State line." Additional roads were to be laid out between "Bledsoe's ferry ... to some point on the Twenty - five Mile Prairie." On March 12, 1833, the second day of the court, "additional commissioners were ordered to view and lay out a road from Springfield to the Twenty - five mile prairie, in the direction of Boonville." This road is still known as the *Boonville Road* and gives its name to Boonville Street in Springfield. It went north to the Osage River and then east to Boonville on the Missouri River. On the court is some to Boonville on the Missouri River.

On the following day of the court A. J. Burnett was named to "lay out road districts and apportion hands to work on the road in Campbell township." Farm Road 156 in vicinity of Bridge No. 2415 has remained the northern boundary of Campbell Township throughout its history of changing size and configuration.

The 28 years between the official formation of Greene County in 1833 and the Battle of Wilson Creek in 1861 witnessed the growth of a typical frontier place that became the most populous and productive agricultural, commercial and industrial urban county of Southwest Missouri and the entire Ozarks region.²² The farming community that Springfield served reflected a mixed rural economy of both subsistence and marketing. The rural community in Greene County grew surplus grains and other crops along with dairy and meat products for the Springfield market.²³

The commercial dairy industry had provided rural Greene County a distinctive cultural landscape by the twentieth century. By 1905 cream and produce were being shipped to the South, New York, Cuba and England. The Springfield Creamery Company was the first to initiate

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rural cream collection routes.²⁴ The desire to increase productivity saw the spread of modern practices of animal husbandry among dairymen. Hundreds of silos, together with great new barns, modern houses and associated outbuildings changed the rural landscape of Greene County and gave it a *look* that has persisted to the present.²⁵ Springfield had become by the 1910s a major milk processor that supplied markets in St. Louis, Kansas City, as well as other regional markets.²⁶ Springfield also had meat packing, woodworking industries and milling operations of some importance as well as markets for cattle, hogs, poultry, eggs, fruits and grains.²⁷ The town was known as the largest horse and mule market in the world.²⁸ This growth accelerated into the 1920s with the rapid expansion of commercial dairy farming in the area. By national standards, Springfield ranked fourth in churned butter production with eleven large creameries in the city which employed more than 650 workers in 1924.²⁹

Of great pride to the Springfield region was its claim as The World's Poultry Capital with Greene County being the greatest chicken county in the United States.³⁰ Springfield made the claim of being the largest initial market of poultry and poultry products in the country. John T. Fitzpatrick, commissioner of the State Bureau of Labor, noted in his 1912 annual report that the wheat and corn is almost wholly used in the mills of the county.³¹ During this period new forms of agricultural marketing emerged with particular attention to the regional marketplace. Fairbanks and Tuck noted that:

One of the developments of the past decade is the greatly increased attention paid to market gardening and truck farming. The products of hundreds of these little farms does not appear in the statistics given in this chapter, for the reason that they are all sold in the markets of Springfield and other towns in the county for home consumption ... no county in the central west surpasses Greene in the variety and excellence of its farms and its farm products.³²

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The ever increasing production of farm commodities and the equally dynamic growth of Springfield as a manufacturer of processed goods encouraged the rapid expansion and further development of the county road system. Roads in Missouri were demanded by the public as the number of automobiles increased from 76,000 in 1915 to 297,00 in just five years. Only eight states had more automobiles than Missouri. "The auto was coming on strong, but, lacking good roads, was entirely at the mercy of the weather." A Junction City lawyer proclaimed in West of the Water Tower that "these people raise corn for the whole country. They work hard and yet they are virtually prisoners. The roads are their jailers ... They need macadam roads so they can take their families and go to the cities and break the monotony of life."

In 1907, the state recognized the importance of highway improvement by appointing a State Highway Engineer as a member of the Board of Agriculture to advise counties in the construction of county highways that would eventually form part of the state system.³⁷ By 1916 the federal government passed the Federal Highway Act that authorized the development of a federal system and offered funds to states on a matching basis. The following year the Missouri legislature, prodded by Gov. Frederick Gardner and State Representative Harry B. Hawes, had enacted legislation that provided the matching funds and took other steps, including the creation of a State Highway Department, required to qualify for federal aid. This, plus amendments to the Hawes Act in 1919 and local efforts in the counties, resulted in some road building. Urban groups advocated a system of hard-surfaced, connected roads and rural groups called for *farm-to-market* roads.³⁸

The progressive nature of Springfield area road construction programs during the 1910s and early 1920s can be understood in newly elected County Judge Harry Truman's proposed road building bond initiative in Jackson County to make his county "the richest and most important air, rail, and highway center in this great republic" for without the program, the area would continue to fall "two years behind for every

one we wait, and let Nebraska and Oklahoma, St. Joe and Springfield, with the backing of St. Louis and Chicago, ease us out of our place in the sun."³⁹

B. CONSTRUCTION CHRONOLOGY

The bridge traces its origins to early 1918, when Greene County Highway Engineer Fred Johnson designed several concrete arches to carry county roads. In May 1918, the Greene County Court solicited competitive proposals to build six arches: four 16-foot spans, a 40-foot arch over the Sac River southeast of Ash Grove (Greene County Bridge No. 2809), and this 48-foot, skewed span over Wilson Creek.⁴⁰ After reviewing the bids the following month, the county awarded a construction contract to the Republic Concrete Construction Company of Republic, Missouri, for all six bridges under an aggregate bid of \$9,380.00.41 The county contract was drawn up on May 28, 1918, between Republic Concrete Company and Greene County. 42 John L. Likens, county clerk, attested to the contract. Likens was from a prominent family holding significant milling interests in the county.⁴³ Republic must have had a change of fortune at this time, because the firm immediately assigned to the county "all its rights, titles, or interest at this time and future date in said contract."44 The county rescinded its agreement with Republic and the next day contracted with the Pioneer Construction Company of Kansas City to build the six bridges. 45 Pioneer began construction of the five smaller bridges first, delivering the reinforcing steel in July and completing them in October 1918.46 By the end of the year the firm had presumably completed the 48-foot arch as well. Since this time, Bridge No. 2415 has carried vehicular traffic in an essentially unaltered condition.

C. LOCATION

Greene County court records and contemporary newspaper accounts place the location of Bridge No. 2415 with the north line of Section 6, Township 28, Range 22 across Wilson Creek.⁴⁷ The road along this

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section line was developed between 1876-1895.⁴⁸ This east-west road connected what is now known as Western Avenue in Springfield with the southwestern area of the county adjacent to the Pond Creek tributary of the Sac River in an area known as Dailey Spring. Although the road connects no major urban areas at this time it does serve a six mile section of the rural landscape. The road benefited Brookline, a small community shown to be within one quarter mile of the corridor in 1895.⁴⁹ Brookline Township was recorded as having a population of 814 people in 1915.⁵⁰

The road continued to serve this area into the early twentieth century, however no county bridge is indicated crossing Wilson Creek in 1915.⁵¹ On the Outline Map of Greene County the explanation key clearly indicates the presence of county bridge locations, but no bridge is shown on the road.⁵²

This road is along the section line boundary between Township 29 N on the north and Township 28 N on the south. This line also serves as the division between the political townships of Campbell on the north and Wilson to the south.⁵³ The site of Bridge No. 2415 is 0.8 mile from the Brookline township on the west.⁵⁴

By 1927 Bridge No. 2415 is indicated on local maps.⁵⁵ The elevation of the bridge is at the 1,158 foot contour on the 1934-1935 USGS topographic map.⁵⁶ After 1930 Bridge No. 2415 is consistently included on maps of the area.⁵⁷ Also appearing on the maps of this time is the designation of the road as the *Brookline Road*, designating its importance in serving Brookline township and community with metropolitan Springfield.⁵⁸

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II. THE BRIDGE

A. DESCRIPTION

Approximately 130 concrete arch roadway bridges have been identified by the Missouri Historic Bridge Inventory. Distributed in 32 counties across the state, these range in span length from between 13 feet (numerous shorter span concrete arch culverts can be found) and 195 feet. These bridges feature both filled and open spandrel designs, although the filled configuration predominates.

Missouri's concrete arches have been divided into three large groups that generally follow regional trends. The first are rural bridges that are typically short to medium-span structures with minimal detailing and often crude foot work built during the first two decades of the twentieth century. The second group is by far the largest and is comprised of rural spans built in the 1920s and 1930s. Virtually all of the bridges built by the state highway department fall within this group including the majority of the open spandrel arches constructed from Missouri Highway Department designs. The third group includes urban bridges (primarily in St. Louis, St. Joseph and Kansas City) that display greater ornamentation than the rural structures and are among the oldest arches in the state.

Bridge No. 2415 in Greene County falls in the first group. Built for the county by the Pioneer Construction Company of Kansas City, this short-span filled spandrel arch is one of two almost identical concrete arches remaining in the county that date from 1918. Moderately skewed, it carries a paved county road over Wilson Creek in the rural area immediately west of metropolitan Springfield. The simply paneled concrete guardrails, plainly formed sidewalls, arch profile and 44-foot actual clear span length of Bridge No. 2415 place it well within the mainstream of concrete arch construction for the period. What distinguishes this span is its relatively early construction date and its high degree of physical integrity. Although built some thirty years after the completion of the first reinforced concrete arch in America, Bridge No.

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2415 is among the oldest of the rural arches found in Missouri. Only the Horseshoe Lake Bridge (Structure No. 191000.2), a 24-foot arch in Buchanan County, has been definitely dated as older among the state's rural filled spandrel arches. Other bridges may eventually prove to be older with further research, but their dates are currently speculative.

Unlike many Midwestern states, Missouri did not extensively use reinforced concrete for construction of vehicular bridge superstructures in the 1910s. The various counties and to a lesser extent, the state highway department continued to prefer steel for bridge superstructures well after concrete had received widespread acceptance elsewhere. This, combined with subsequent attrition, has resulted in the relatively small number of concrete bridges that exist today from this formative period. Of the 13,200 pre-1951 bridges identified in Missouri by the state-wide historic bridge inventory, only about 85 are filled spandrel concrete arches.

With its 44-foot clear span and 1918 construction date, it is among the longer and the older of these rural county bridges. Bridge No. 2415 does not display any features that could be regarded as technologically superlative. Rather, the bridge derives its significance from its representation of the broad trend of concrete bridge construction in Missouri. It represents a well-preserved and documented, early concrete arch that was designed by a county engineer just as the state highway department was beginning to draft standardized plans.

Bridge No. 2415 consists of a filled spandrel concrete arch supported by reinforced concrete abutments and wing walls. The abutments are 13 feet tall, 18 inches thick, while the wing walls are 12 inches thick, 10 feet long with tops sloping from 13 feet high at the arch sidewalls to 11 feet high at their free standing ends. The structure was constructed on a 25 degree, left advanced skew with a length of 47 feet between abutment fillfaces and an arch clear span of 44 feet between the arch springlines. As measured to the outside faces of the arch sidewalls, the structure's basic width is 18 feet 2 inches, which provides a roadbed width of 16 feet after allowing for the parapet walls. The underside of the arch rises 11 feet

6 inches above the springlines which rest upon the top of the abutment footings. Footings for the abutments and wing walls are founded upon the exposed limestone bedrock which also serves as the streambed in the vicinity of the bridge. Typical of its local design and early construction, the arch is simply detailed, with plainly formed sidewalls and solid concrete parapets that feature rectangular panels recessed 1 inch and corbeled coping. The parapet walls are 13 inches thick, 48 inches tall with 16 inch square bulkheads of modest appearance at each end. Bridge No. 2415 has suffered minor collision damage to its parapet walls, but otherwise remains intact.

B. MODIFICATIONS

Court records indicate that bridge maintenance and repair periodically took place. However, given the number of bridges across Wilson Creek and frequent failure to indicate upon which structure work was done, it was not possible to determine the dates or type of repairs made on Bridge No. 2415 after its construction, although no significant repairs or modifications are evident from its current character.

The concrete deck has received numerous applications of bituminous coverings, in conjunction with the resurfacing of Farm Road 156.

C. OWNERSHIP AND FUTURE

Bridge No. 2415 has been owned and maintained by Greene County since 1918. The Greene County Highway Department has designated this as Bridge No. 2415. The Missouri Highway and Transportation Department has adopted this number in their county bridge inventory. It is on Greene County Farm Road 156, 0.8 miles east of U. S. Highway 60.

An appraisal of the bridge revealed it is functionally obsolete to carry modern vehicular traffic. The curb-to-curb width of 16 feet provides only one driving lane on an otherwise two lane road along Farm Road 156.

The alignment of the bridge and approach roads is straight and, in conjunction with the level to gently rolling terrain, the speeds of the vehicular traffic tend to be quite high on this highly traveled "short-cut" route between the rapidly developing Brookline and southwest Springfield areas. Due to the motorist safety hazard presented by this one lane bridge, Greene County made the decision to replace the structure with a two lane bridge. The proposed alignment and location of the replacement structure is on the same alignment of the existing bridge which requires that Bridge No. 2415 be removed.

As it is not feasible to relocate Bridge No. 2415, from either an economic or practical standpoint as it was constructed as a cast-in-place concrete arch type structure which provides for no realistic means of disassembly and reconstruction, advertisement of availability of the bridge will not be performed. Immediately prior to construction of the replacement structure tentatively scheduled for fall, 1991, Bridge No. 2415 will be removed per standard demolition procedure.

III. BIOGRAPHICAL MATERIAL

A. PIONEER CONSTRUCTION COMPANY

Pioneer Construction Company was headquartered in Kansas City, Missouri. Doing business through the 1910s they served as a regional construction and bridge building concern. Its corporate officers at the time of construction were Fred Hoover, president and Edward Appleby, secretary.⁵⁹ The assignment of the bridge contract between Republic Concrete Company and Pioneer Construction was handled by Ed. W. Appleby serving as company secretary.⁶⁰ The Pioneer offices were located at 515 New York Life Building with a telephone listing of Main 2478.⁶¹ The Kansas City Directory listed the company in both the Construction section and the Bridge Building section. A quarter page advertisement placed in the 1918 Kansas City Directory listed Pioneer Construction Company with both *Engineers* and *Builders*.⁶²

B. FRED W. JOHNSON

Fred W. Johnson was the Greene County Ex-Officio Highway Engineer in 1918. Johnson designed all six of the concrete spans requested by the Greene County court.⁶³

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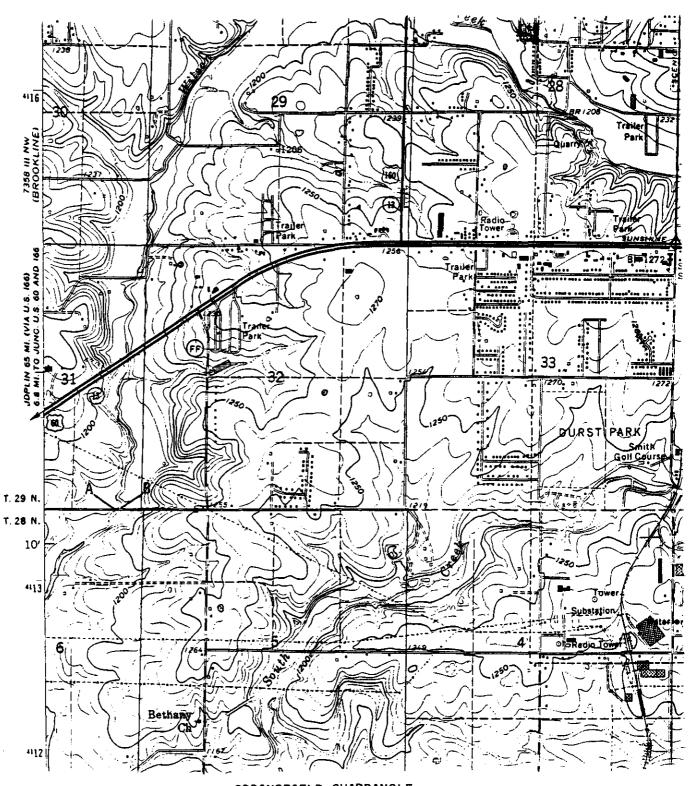
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